

We Claim:

1. A connector apparatus including a fluid coupling, said fluid coupling comprising:
a first coupler including a wireless transmitter attached on said first coupler;
a second coupler releasably connected with said first coupler, the second coupler
5 including a wireless transmitter mounted on said second coupler;
said first and second transmitters of said respective couplers being constructed
and arranged to communicate when said respective couplers are in a pre-coupled
position;
said second coupler being in fluid communication with said first coupler when
10 said first and second couplers are in a connected state.
2. The connector apparatus according to claim 1, wherein said first coupler being an
RF coupler suitable for connection with a fluid source, and said second coupler being a
reader coupler suitable for connection with a fluid transfer line.
- 15 3. The connector according to claim 1, wherein said first and second couplers each
including at least one antenna connected thereon to enable communication between said
first and second couplers.
- 20 4. The connector apparatus according to claim 1, wherein said wireless transmitter
of said first coupler is an RFID tag, said RFID tag including coded information therein,
said coded information being selected from the group of identification, mode of
operation, flow parameters, and security markings.
- 25 5. The connector apparatus according to claim 1, wherein said wireless transmitter
of said second coupler including a reader circuit having a data communication module.
6. The connector apparatus according to claim 5, wherein said data communication
module comprising:
30 a first transceiver transmitting and receiving data from said first transmitter of
said first coupler, said first transceiver being operatively connected with a second

transceiver, said second transceiver transmitting and receiving data from said first transceiver and transmitting data to and from said processing equipment;

a microcontroller operatively connected with both said first and second transceivers, said microcontroller establishing and controlling communication between

5 said first transceiver and said second transceiver;

a DC/DC converter, said DC/DC converter providing power supply; and
a process sensing and data acquisition module, said process sensing and data acquisition module measuring at least one fluid flow parameter.

10 7. The connector apparatus according to claim 5, wherein said first transceiver operating at a frequency of at least 13MHz in communicating with said first transmitter of said first coupler.

8. The connector apparatus according to claim 5, wherein said first transceiver being
15 a circuit operating in a range less than 5cm in communicating with said first transmitter of said first coupler.

9. The connector apparatus according to claim 1, wherein said pre-coupled position defining said first coupler being oriented and positioned at least partially engaged with
20 said second coupler and said first coupler and said second coupler resemble a one to one relationship at a single time such that said second coupler is prevented from connecting and communicating with another coupler unless said first coupler is removed from said pre-coupled position a distance away from said second coupler.

25 10. A coupler for fluid dispensing comprising:

a body including first and second ends; said ends defining an opening longitudinally therethrough;

a RFID tag mounted on said body; said RFID tag enabling RF signal transmission to and from said RFID tag for communicating with said RFID tag; said RFID tag being
30 constructed and arranged such that communication is enabled with a piece of dispensing

equipment when said body being at least partially engaged with said piece of fluid dispensing equipment in a pre-coupled position.

11. A reader coupler for fluid dispensing comprising:
- 5 a body including first and second ends; said ends defining an opening longitudinally therethrough;
- a reader circuit mounted on said body; said reader circuit enabling signal transmission to and from said reader circuit for communicating with said reader circuit; said reader circuit enabling interrogation of a mating coupler with transmitter in
- 10 determining a positive connection; said reader circuit being constructed and arranged such that interrogation is enabled with said mating coupler when said body being at least partially engaged with said mating coupler in a pre-coupled position.
12. A system for controlling fluid dispensing comprising:
- 15 a fluid source;
- a connector apparatus including a first coupler connected to said fluid source, said first coupler including a first transmitter attached on said first coupler, and a second coupler releasably connected with said first coupler, said second coupler including a
- 20 a fluid transfer line connected with said second coupler
- said first transmitter and said second transmitter communicating through wireless means;
- said first and second transmitters constructed and arranged to communicate when said respective couplers are in a pre-coupled position; and
- 25 a processing equipment in communication with said second coupler, said process equipment including means for identifying said first coupler through said communication between said first transmitter and said second transmitter of said respective couplers, and means for enabling or disabling fluid flow from said fluid source through said first coupler, said second coupler, and said fluid transfer line.

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13. The system according to claim 12, wherein said first transmitter of said first coupler is an RFID tag, said RFID tag including coded information therein, said coded information being selected from the group of identification, modes of operation, flow parameters, and security markings.

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14. The system according to claim 12, wherein said second transmitter of said second coupler including a reader circuit having a data communication module.

15. The system according to claim 14, wherein said data communication module comprising:

10 a first transceiver transmitting and receiving data from said first transmitter of said first coupler, said first transceiver being operatively connected with a second transceiver, said second transceiver transmitting and receiving data from said first transceiver and transmitting data to and from said processing equipment;

15 a microcontroller operatively connected with both said first and second transceivers, said microcontroller establishing and controlling communication between said first transceiver and said second transceiver;

a DC/DC converter, said DC/DC converter providing power supply; and

20 a process sensing and data acquisition module, said process sensing and data acquisition module measuring at least one fluid flow parameter.

16. The system according to claim 15, wherein said first transceiver operating at a frequency of at least 13MHz in communicating with said first transmitter of said first coupler.

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17. The system according to claim 15, wherein said first transceiver being a circuit operating in a range of less than 5cm.

18. The system according to claim 12, wherein said pre-coupled position defining said first coupler being oriented and positioned at least partially engaged with said second coupler, said first coupler and said second coupler resemble a one to one relationship at a

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single time such that said second coupler is prevented from connecting and communicating with another coupler unless said first coupler is removed from said pre-coupled position a distance away from said second coupler.

5 19. The system according to claim 12, wherein said processing equipment being operatively connected with a flow governing device.

20. The system according to claim 19, wherein said flow governing device is integral with said second coupler so as to enable control at a point of connection between said
10 first and second couplers.

21. The system according to claim 15, wherein said second transceiver operating at a frequency of about 2.4GHz in communicating with said processing equipment.

15 22. The system according to claim 12, wherein said second coupler including a lock out device mounted therein, said lock out device operatively connected with said processing equipment and being releasable upon positive identification of said first coupler so as to enable connection of said first and second couplers.

20 23. A method of controlling fluid line dispensing through connectors comprising:
providing fluid transfer line incorporated within a connector apparatus having a first coupler with a first transmitter attached thereto and a second coupler with a second transmitter mounted thereon releasably connected with said first coupler, and providing a processing equipment in communication with said first transmitter of said first coupler
25 through said second transmitter of said second coupler;

positioning said first coupler with said second coupler in a pre-coupled position such that communication is enabled between said first and second transmitters of said respective couplers;

powering up said first transmitter by transmitting a signal from said second
30 transmitter to said first transmitter;

transmitting a reply signal from said first transmitter to said second transmitter,
said reply signal including identification information of said first coupler;

transmitting said reply signal received by said second transmitter to said
processing equipment;

5 interpreting said reply signal received by said processing equipment and
identifying said first coupler; and

manipulating said fluid transfer line, based on said communication between said
first transmitter and said second transmitter, to enable fluid flow or disable fluid flow
from said fluid source through said first coupler, second coupler, and fluid transfer line.

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24. The method according to claim 23, wherein said step of positioning said first
coupler and said second coupler in said pre-coupled position including at least partially
engaging said first coupler with said second coupler in a one to one relationship at a
single time such that said second coupler is prevented from connecting and
15 communicating with another coupler unless said first coupler is removed from said pre-
coupled position a distance away from said second coupler.

25. The method according to claim 23, wherein said step of manipulating said fluid
transfer line, including manipulating said transfer line with a flow governing device
20 operatively connected with said processing equipment, said flow governing device being
incorporated with said second coupler so as to control fluid flow proximate a connection
point between said first and said second couplers.

26. The method according to claim 23, further comprising initially locking out said
25 second coupler from connecting with said first coupler with a lock out device
incorporated with said second coupler, said lock out device being releasable upon
positive identification of said first coupler.

27. The method according to claim 23, further comprising measuring at least one
30 fluid flow parameter and confirming information including said fluid flow parameter
using said process equipment.

28. The method according to claim 23, further comprising updating information stored in said transmitter of said first coupler by transmitting said information from said process equipment to said transmitter of said first coupler through said transmitter of said
5 second coupler and writing said information into the first transmitter.